

## ABSTRACT

A method and apparatus that can generate two frequencies separated by the atomic hyperfine frequency separation needed to excite resonance in a Cs atom. In the present invention a coherent light source is frequency modulated with a modulation frequency having a sine wave to generate a lightwave. The lightwave comprises the two coherent optical fields having the frequency separation needed to excite resonance in the Cs atom. The modulation frequency can then be adjusted in order to fine-tune the frequency separation of the two coherent optical fields. The present invention also provides a method for localizing about 50% of the power in the lightwave at the two coherent optical fields by frequency modulating the light source with a square wave.